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ABSTRACT

This study was undertaken to examine the constellation of attitudes and beliefs felt to be related to health behavior. Two types of health messages were delivered to a group of teenage camp counselors on the disease diabetes. Their attitudes toward the disease in terms of their perception of vulnerability to it, their perception of its severity, and their perception of the need for and benefits of tests for early detection of the disease were assessed. An optional opportunity to participate in a diagnostic test was then offered. Attitudes were reassessed three days later at which time the subjects could request additional educational materials about diabetes. The health educational materials were successful in immediately modifying general attitudes about diabetes, but not successful in changing any of the underlying components. Only one component of attitude, the perception of vulnerability to diabetes, affected the decision to participate in the diabetes diagnostic test. The same attitude was also instrumental in affecting receptivity to new health educational materials. It is concluded that only through educational efforts commencing at an early age and directed at the underlying components of health attitudes can we hope to bring about desirable health behavior. (MC)

The Relationship Between Health Attitudes and Behavior*

Bonnie L. Owen**

Few problems have plagued the health professions more than the public's failure to take full and judicious advantage of modern biomedical knowledge, skills, and services. In respect to prevention, treatment, and rehabilitation, the health status of our nation could become far more favorable if we could cope with this problem more effectively. This gap between available health knowledge and resources on the one hand, and their effective utilization by the public on the other, has been so widely discussed that it needs no further elaboration here.

Almost every health profession, agency and organization devotes at least some energy and resources to the problem of promoting public compliance with the dictates of present-day biomedical knowledge. Most health educational efforts have traditionally operated under the assumption that by providing the public with the appropriate information about a given health problem, their attitudes concerning this problem will be changed and that in turn will lead to the desired behavior. However, as more and more research is carried out to determine what factors influence health behavior, the validity of this assumption is being challenged. The research study described in this paper is an attempt to systematically examine the effects of a constellation

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of beliefs and attitudes on what people do concerning their health.

In the late fifties a model for predicting health behavior was developed by Hochbaum and associates[1]. This model has been applied in program planning and has had some experimental verification. However, as Rosenstock points out in his excellent review of the research in this area[2], much of this research has methodological shortcomings. The study described in this paper attempts to examine some of the basic postulates of the model while attempting to overcome some of the methodological deficiencies of earlier work.

The Hochbaum model of health behavior predicts that the primary factors underlying an individual's motivation to take action on a particular health problem are: he must perceive himself susceptible to the health problem--that is, he must subjectively feel that he is at risk; he must perceive that the health problem would have serious consequences for him if it should occur; and he must perceive that there is an acceptable alternative of action available for him. To take a concrete example, the model would predict that for a woman to be properly motivated to obtain a pap smear she must first feel that it is possible for her to have uterine cancer, that it could have serious consequences for her if she does, and that by obtaining a pap smear she would be able to alleviate the impact of this disease. These three underlying factors of the model will subsequently be referred to as: vulnerability, effects, and benefits.

One of the serious methodological deficiencies of previous research on the health behavior model has been that almost all studies were retrospective in nature. That is, a person's attitudes, beliefs and feelings about a given health problem were determined after he had taken a specific

health action. Findings from retrospective studies are subject to errors such as memory distortion, a person's post-action attempt to reconstruct his feelings and beliefs as they had been prior to the action, and the effects of cognitive dissonance. A more accurate test of the model would, of course, require an assessment of subsequent behavior. The present study was designed to do just that.

The study was designed to test the following hypotheses:

1. People's attitudes toward a given health threat affect their decision to take a recommended health action.
2. Taking some health action affects a person's subsequent attitude both toward the action and toward the health problem with which it is linked.
3. People's attitudes toward a health problem and/or toward a recommended health action affect their receptivity to educational communications.
4. People are more receptive to new health educational communications if they have taken some recommended action.

METHODOLOGY

The Disease, the Action, and the Study Population

Diabetes was selected as the disease which best met the requirements of the study; the health action was obtaining an urinalysis, and the sample chosen was teenagers, 13 - 19 years old.

Pre-experimental Study

One of the considerations for choosing diabetes as the disease and choosing adolescents for the study population was the belief that these subjects would be relatively poorly informed about diabetes and because of this their attitudes could easily be affected by new information. In order to verify this assumption and to provide baseline data for the interpretation of the study results, a survey of adolescents' attitudes and knowledge concerning diabetes was carried out.

Self-administered questionnaires were administered to 214 teenage students (107 boys, 107 girls) from junior and senior high schools during physical education classes. The questionnaire was designed to assess the teenagers' attitudes concerning their vulnerability towards diabetes, the effects of this disease if contracted, and the benefits of urinalysis as a diagnostic test for this disease. In addition, questions assessing the teenagers' level of knowledge about diabetes were asked.

As predicted, teenagers held rather mild attitudes concerning diabetes, that is, as a whole they did not feel particularly vulnerable to the disease, they did not feel that it would have very serious effects if contracted, and they generally did not feel that urinalysis was necessary for those in their age group. However, the teenagers in general appeared relatively well-informed about this disease.

Experimental Design

The investigation was carried out in a setting where extraneous factors and influences (e.g., previous experience with the disease, influence exerted by other people, etc.) were controlled to the greatest extent possible. To insure this kind of control the design

of the experiment involved procedures in which certain levels of the critical attitudes were aroused in a number of groups of subjects by using a persuasive communication, that these subjects shared a specified body of knowledge concerning diabetes, and that the opportunity for taking a given health action (urinalysis) was provided equally for all subjects. The general design of the study is diagrammed below:

Persuasive Communication → Attitude (Measure 1) → Behavior (Observation) → Attitude (Measure 2)

Subjects

The subjects of the experiment were 251 teenage counselors in summer camps (139 boys, 112 girls).

The Persuasive Communication

Since the survey had determined that teenagers held rather neutral views concerning their vulnerability to diabetes, its effects, and benefits of diagnostic tests, educational messages about diabetes in the form of tape recorded plays were used to change these neutral attitudes. One tape recording (designated Intense) was designed to intensify teenagers' attitudes concerning their own vulnerability to the disease, to stress its serious nature if contracted, and to point out the need for tests for early detection of the disease. The other recording (designated Moderate) was intended to generate the same attitudes but only at a moderate level. The factual information presented in the two recordings was identical.

The Attitude Questionnaire

A self-administered questionnaire was designed to assess to what degree the attempt to generate these attitudes had succeeded and how well the subjects had learned and accepted the material presented.

Procedures

The study was conducted in eleven groups of approximately 25 subjects each. Half of these groups were randomly selected to hear the Intense recording, the remaining half heard the Moderate play. Each group participated in two sessions, the first of which lasted an hour, the second half an hour. These sessions were spaced three days apart.

Session 1 :

1. Induction of moderate and intense attitudes through the tape recorded play. The rationale for the study given to the subjects was that the Public Health Service was interested in getting teenagers' reactions to certain educational materials.
2. Attitude questionnaire--the questionnaire assessing attitudes toward diabetes was completed by all subjects immediately after presentation of the play.
3. Behavioral measure--upon completing the questionnaire, the subjects were given the opportunity to sign up for a free diabetes diagnostic test which was to be taken the same or the next day. It was stressed that participation in this test was voluntary.

Session 2: (three days later)

1. Post-attitude questionnaire administered--this questionnaire was essentially the same as the one administered at Session 1.
2. Subjects were given the opportunity to obtain additional information about diabetes.

Both sessions were conducted by trained social psychologists.

Data Analysis

Attitude scales were developed in the following manner: responses to questionnaire items from questionnaire 1 which assessed the three components of attitude (vulnerability, effects, and benefits) were factor analyzed. On the basis of this factor analysis, 18 items were selected which appeared to reflect a person's general attitude about diabetes. These items will be referred to subsequently as the general attitude scale. These 18 items were then grouped on the basis of content into three sub-scales: (1) vulnerability, (2) effects, and (3) benefits. Subjects in the sample completing all 18 of these items on both the pre and post questionnaires were given one score on the general scale and one score on each of the three sub-scales. (A high score indicated an intense attitude, a low score a more moderate attitude.) There were 148 subjects included in the analysis.

RESULTS

Attitudes and Induction

Subjects exposed to the intense induction had significantly higher general attitude scores than those exposed to the moderate induction ($F=4.43$, $df=1/140$, $p < .05$). Although those exposed to the intense message tended to have higher scores on each of the three sub scales, their scores were not significantly different from those who listened to the moderate tape.

To determine whether the communication might have had a delayed effect upon attitudes, the scores from the second questionnaire were related to induction. Those who had been exposed to the intense play at session 1 had significantly higher general attitude scores ($F=10.99$, $df=1/140$,

$p<.01$), higher benefit scores ($F=7.08$, $df=1/140$, $p<.01$), and higher effect scores ($F=6.47$, $df=1/140$, $p<.05$) on the second questionnaire.

Behavior

Of the 148 subjects, 38 elected to take the diabetes diagnostic test. Of this number half had listened to the intense play, half to the moderate play. Thus, the persuasive communications, although successful in modifying attitudes were not successful in modifying behavior.

Test of Hypotheses

Hypothesis 1: (People's attitudes toward a given health threat affect their decision to take a recommended health action). To test this hypothesis, subjects' scores on the first attitude questionnaire were related to their participation in the diabetes test. General attitude scores, effects scores and benefits scores were not related. Only one of the sub-scales, the subjects' perception of his own vulnerability to diabetes, was found to be significantly related to the subsequent decision to act ($F=5.56$, $df=1/140$, $p<.05$).

Hypothesis 2: (Taking some health action affects a person's subsequent attitude toward the action and toward the health problem with which it is linked). To test this hypothesis it was necessary to determine whether those who had taken the test had changed their attitudes after having participated in the test. The hypothesis predicted that those who had taken action would increase their scores from the first to the second questionnaire while the scores of those who had not acted would either decrease or remain the same. Scores of each subject on the first and second questionnaires were compared and the amount of change determined. Although those who acted tended to increase their attitude scores from the first to the second questionnaire more than those who did not act, the difference was not statistically significant.

Hypothesis 3: (People's attitudes toward a health problem and/or toward a recommended health action affect their receptivity to educational communications). To test this hypothesis the data which concerned requests for additional information about diabetes at session 2 were examined. Of the sample of 148 subjects, 78 (more than half) had requested additional information. Attitude scores from both the first and second questionnaires were compared with the requests. Those who requested additional information had significantly higher general attitude and vulnerability scores on both the first and second questionnaire (first questionnaire general: $t=2.20$, $p<.05$, vulnerability, $t=2.14$, p .05; second questionnaire general: $t=2.37$, $p<.05$, vulnerability, $t=2.26$, $p<.05$).

Hypothesis 4: (People are more receptive to new health educational communications if they have taken some recommended action). To test this hypothesis the decision concerning participation in the diagnostic test was related to subsequent requests for additional information about diabetes. This comparison showed that although those who had taken the diagnostic test were more likely to request additional information about diabetes than those who had not taken the test, the differences were not statistically significant.

Summary of Results

The persuasive communications used were successful in immediately modifying general attitudes about diabetes, but were not successful in changing any of the three underlying components of the attitude (e.g., vulnerability, effects, and benefits). However, these educational materials appeared to have some delayed effect on attitudes with the

attitude scores on both the effects scale and the benefits scale increasing on the second measurement three days later.

Only one component of attitude, the perception of vulnerability to diabetes, affected the decision to participate in the diabetes diagnostic test with those participating having significantly higher scores. This same attitude also affected the requests for additional information made at the second session. As pointed out earlier, however, the vulnerability component of attitude was not affected by the educational materials which were used.

The behavior itself appeared to have little or no affect on subsequent attitudes with the scores of those participating in the diabetes test not increasing any more than those who did not participate.

General attitude scores and scores on the vulnerability scale (on both the first and second questionnaires) affected the incidence of requests for additional information with those having higher scores being more likely to request such information. On the other hand, participation in the test did not affect subsequent requests for information.

Discussion

There are several implications for school health education in this study. Although they must be regarded as suggestive rather than definitive because of the narrowly circumscribed nature of the study, they do reinforce findings obtained in other contexts.

The research demonstrated, as have many other studies, that a persuasive communication can succeed in modifying general health

attitudes. Although none of the assumed three critical components of this general attitude (vulnerability, effects, and benefits) were immediately significantly affected by the communication, there appeared to be a delayed affect that did produce significant changes in these components after three days. To what extent, if at all, these changes would be retained with further passage of time, could not be tested.

On the other hand, the findings support to a much lesser degree the common assumption that changes in attitudes lead to corresponding behavioral changes. This, too, is in line with the results of much recent research. Only one of the critical components of the general attitude, vulnerability, seemed to relate to behavior.

There are several practical implications for school health education in these findings. This study suggested that superficial, one-shot attempts to modify behavior will probably not be successful. In fact, there was some evidence that such attempts may have just the opposite effect. Thus, those teenagers who expressed contempt for the educational materials used in the experiment were less likely to take action than others even though these same teenagers indicated that they felt vulnerable to diabetes. It appears then that systematic and sustained educational attempts directed at the underlying components of health attitudes will in the long run be more effective in modifying health behavior. There is some recent research evidence[3] which suggests that a perception of vulnerability to disease develops very early in a child's life. These results along with the results of the research program described here point out the need to initiate a curriculum to alter or change basic beliefs at an early age.

In interpreting the results of this experiment, the reader should take into account that the study was conducted in a setting where all situational factors were controlled to the extent possible. Thus, immediate alternatives for action were provided, and social pressures which have an affect on behavior were minimized. On the other hand in developing educational programs to influence health behavior, these factors should be kept firmly in mind. Thus, it is suggested that health information be presented in a context which appeals to the basic attitudes described earlier, which provides meaningful and immediate courses of action to the students, and presents the information in a context which will be socially acceptable or desirable to them.

SUMMARY AND CONCLUSIONS

This study was undertaken to examine the constellation of attitudes and beliefs felt to be related to health behavior. Two types of health messages were delivered to a group of teenage camp counselors on the disease diabetes. Their attitudes towards the disease (that is their perception of vulnerability to it, their perception of its severity, and their perception of the need for and benefits of tests for early detection of the disease) were assessed. An opportunity to participate in a diagnostic test was then offered. Attitudes were reassessed three days later at which time the subjects could request additional educational materials about diabetes.

The health educational messages were successful in immediately modifying general attitudes about diabetes, but not successful in changing any of the underlying components. Only one component of attitude, the perception of vulnerability to diabetes, affected the decision

to participate in the diabetes diagnostic test. This same attitude was also instrumental in affecting receptivity to new health educational materials.

In conclusion it appears that too often health educational techniques are directed only at creating a new, general attitude toward a given health problem rather than at the more underlying dimensions which will influence behavior. Thus, it is only through systematic and sustained educational efforts, commencing at an early age, and directed at the underlying components of health attitudes, that we can hope to bring about desirable health behavior.

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